Poetry in motion

appropriation of the world of Apps

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Poetry in motion–appropriation of the world of Apps

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ABSTRACT

Motivation – This study was motivated by an interest in understanding the new opportunities brought to use by App technologies available on mobile devices. In our qualitative analysis of interview data we used the concept of 'appropriation', and in doing so we realized that we needed to address both individual and social appropriation.

Research approach is a hermeneutic interpretation of data from interviews with 12 iPhone users triangulated with models of appropriation, theories of micro and macro level appropriation, and the concept 'expansive learning'

Findings/Design – Through use, idiosyncratically and in collaboration with others, people make the iPhone and its App-world their own to the extent that they use the phone as a port to exercising personal interests like poetry, Italian novels, planning and cookbooks; hence the title of this paper. A closer look shows that in doing so, the interviewees have expanded their scope of what activity is enabled by their iPhone.

Research limitations/Implications – Despite being an explorative study addressing only Danish users of iPhones and Apps, our findings suggest to take seriously the expansion of users' scope of activity and abandon the idea that use can be predicted.

Originality/Value – This paper presents a new conceptualization of context of use. The presented analysis of data opens a window to the transitions that users undergo, alone and together in order to make the iPhone their own. A particular focus is how the iPhone and its Apps support or hinder the artefact to become a personal access-point to the world of Apps.

Take away message – The paper presents findings, which indicate that appropriation takes place at two levels, first at the social, and then at the individual level. This pattern is parallel to that of learning in general. The conclusion we draw from this finding is that expansion must be also a social process where you learn by constructing a new activity.

Keywords

Appropriation, expansive learning

INTRODUCTION

This paper deals with appropriation of App's. We use the term 'App-world' to talk about the selection of small icons that people have on their smart phones, as a reflection of the larger selection of functionality available through App Stores and Markets. These functionalities are all available through the same interaction instrument: The smartphone.

We borrow the definition of *appropriation* from Carroll et al. (2002) who define it as *"the way that users evaluate and adopt, adapt and integrate a technology into their everyday practices"* (Carroll et al. 2002). We further take our point of departure in Carroll et al.'s model of the transformation process from technology-as-designed to technology-in-use. This model has three levels and our focus is on level two: The process of applying criteria for appropriation or dis-appropriation (Carroll et al. 2002). While the model is developed from studies of youth using WAP around the millennium, we have looked into the situation some ten years later, where smartphones are commonplace in the Western hemisphere, and the App-world, as a consequence of the habituation of social media, has set a new agenda for user expectations.

Since our object of study comprises an artefact compound consisting of both a knowledge sharing facility (the App-world) and a communication facility (the wireless mobile device, in our case the iPhone) we have reviewed related research on both the appropriation of Wikipedia and of iPhones. Bryant et al. (2005) conducted an analysis of and modelled users' experience of the knowledge-sharing environment, Wikipedia. In particular their analysis of how experience changes over time, beyond simply learning to operate the device, and the role of Wikipedia as such in this process turns out to be important. Bryant et al. (ibid.) carefully document a development from newcomer to Wikipedian as patterns of movements from a local focus on individual articles to a concern for the quality of the content as a whole, in summary, an expansion of goals, new roles, different tools and especially, new motives.

Karapanos et al. (2009) conducted an "over time study" following six iPhone users for the first five weeks from purchase, and analyzed the data through a framework for experience and appropriation as three experience

phases, driven by the forces of Familiarity, Functional Dependency and Emotional Judgment, respectively.

While Carroll et al. (2002) look at the WAP technology from the point of view of the phone function, and Karapanos et al. (2009) look at iPhone-purchases from an experience point-of-view, we will address the smartphone (in our case iPhones) from the point-of-view of being an instrument that gives affordable access to being on-line 24/7. With the App Store, users are potentially in control of selection and tailoring the functionalities of their own device, adding to the dynamism and flexibility of iPhones.

We expand Carroll et al.'s definition of appropriation to include both individual and social development, and address this process as an individual-in-context movement of double and complementary nature, covering both learning to use and expansion of context of use. Through a micro-level analysis we identify change in capabilities of using, and through a macro-level analysis we identify change in ways of living in the world with this access device. We have conducted these analyses by one set of analytical concepts to the micro, and another one to the macro level of change.

THE STUDY

The study consists of 12 interviews with users of iPhones. Users range in age from 19 to 62, three men and a woman at 19-23 years of age, a man and two women around 60, and the remaining interviewees spread in their 30s and 40s (three men and two women) (see table 1). In addition, five were re-interviewed after a year (indicated with a *). At the time of the interviews, four of the interviewees had owned their phones for 2-3 months, while at the other extreme two had had iPhones before they were officially introduced. Three people owned iPhones previous to their current phone and an additional three owned an iPod Touch. All had other cell-phones previous to the iPhone (but only one had another brand smartphone before). When it comes to education, five had completed an academic degree, four were in high school or college, and three had undergone vocational training. One had been a very long-term Mac user, two were Mac users before purchasing their iPhone, and four purchased Macs after acquiring their iPhone. Four were current PC users. They all volunteered, or got volunteered by friends, through a request on Facebook.

	1*	2*	3*	4*	5	6*	7	8	9	10	11	12
Age group	30-40	30-40	30-40	55-65	55-65	18-23	18-23	30-40	30-40	55-65	18-23	18-23
Education	Voc.	Voc.	Grad.	Grad.	Grad.	Coll. Stud.	Coll. Stud.	Grad.	Grad.	Voc.	Coll. Stud.	Coll. Stud.
Gender	W	M	M	M	W	M	M	W	M	W	M	W

Table 1. Interview subjects' age, gender and educational background (* indicates follow-up interviews)

The interviews lasted between 25 and 45 minutes and were recorded, transcribed and translated. The transcriptions were coded and used, first in a grounded analysis where statements were marked and gathered from the bottom up, with a focus on the possible tensions in and between experiences. Secondly, the same transcripts were marked up according to the below outlined understanding model. Follow-up interviews were shorter but underwent the same treatment.

The interviews reveal feelings and attitudes rather than they address what actually happens in situations of use and point to the social setting of use rather than to individual orientation. After a presentation of our theoretical understanding of instruments and their roles in everyday activity and experience, we will return to the analysis of the interviews and the particular findings.

FOUNDATION FOR MACRO ANALYSIS

Regarding the macro-level study of how context is being changed, we are inspired by three sources: Göranzon's framework of changes in professional competence (Göranzon 1983), distinguishing between first, second and third order effects, Rogers' framework of adoption of innovation, and Engeström's concept of 'expansive learning' (1987).

According to Göranzon, first order effect can be observed within the first half year after a computer application being introduced at a workplace: Problems dealt with are mostly some that have technical solutions. After a period of 0.5 to 1.5 year of appropriation, problems of psycho-social nature draw attention. Finally, after 4-5 years, changes in the professional competence become apparent. On the one hand the traditional professional language continues to develop according to the growing experience based on practice and on knowledge becoming situation-related and tacit. On the other hand, and in order to meet the demand for handling the technology under appropriation, a professional language of the technology appears. Since both languages are concerned with the performance of the professional individual, they interfere, most likely, according to Göranzon, in a way where the situated tacit knowledge embedded in the professional language is jeopardized at the expense of a growing computed-related and computer application related vocabulary.

In the search for explanations as to why technologies spread, and why some get adopted and others not, scholars from political science, economy, sociology and psychology have given us a number of answers. Rogers' book 'Diffusion of Innovations', first published in 1962,

has stayed a conceptual tool in this area, mostly due to the categorization of users according to their willingness to adopt innovation: innovators, early adopters, early majority, late majority, and laggards (Rogers 1962, p. 150). This scale applies to aggregated levels of economy, but is often (mis-)used by people who label themselves or others as 'laggard' or 'early adopter'–this showing that a discourse of innovation has moved into everyday language (as also demonstrated by our interviews). More interesting for the purpose of understanding macro-level appropriation is, however, Rogers' scale of decision-making regarding adoption, where the point is to reach critical mass of consumers of a given product. Rogers outlines a number of strategies, among which the strategy of having an innovation adopted by a highly respected individual within a social network is one. Rogers maintains that there are a number of intrinsic characteristics of innovations that influence an individual's decision to adopt or reject an innovation:

• Relative Advantage: How improved an innovation is over the previous generation.

• Compatibility: The level of compatibility that an innovation has to be assimilated into an individual's life.

• Complexity or Simplicity: If the innovation is too difficult to use, an individual will not likely adopt it.

• Trialability: How easily an innovation may be experimented with as it is being adopted. If a user has a hard time using and trying an innovation, this individual will be less likely to adopt it.

• Observability: The extent that an innovation is visible to others. An innovation that is more visible will drive communication among the individual's peers and personal networks and will in turn create more positive or negative reactions.

The iPhone seems to score high on all these criteria, which is a way of explaining its success on the market.

Technological development is more than ever market driven. For society to hold together and for humans to develop, it is however also necessary to apply a perspective of learning. Engeström (1987) has over the last thirty years developed his concept of expansive learning to be a tool for designers and educators. At the core of expansive learning is reflection. Where learning *how* happens spontaneously and on an individual basis, learning to ask why and to come up with answers, where answers are not already there, requires a social context of peers. This is just what we see happens in the lives of the iPhone users we interviewed.

In the analysis below we will return to these dimensions after an analysis at the micro level.

MICRO FOUNDATION FOR ANALYSIS

Regarding 'micro level study' of appropriation as 'change in capabilities of using' our theoretical foundation comprises the social and the individual, the situational as well as change over time. It is a conceptualization of experience as fluent and multidirectional, and of learning as a social, gradual and intentional.

We interpret the reported experiences through Wertsch's (1998) segmentation of appropriation, which he describes through (1) anticipation, (2) initial familiarity, (3) development of repertoires of routines and the (4) development of new forms of use. Bakhtin, (acc. to Wertsch's (1998) p. 54) talks about language and how a word is first somebody else's and then, when being picked up, becomes half someone else's half one's own. It becomes one's own only when populated with one's own intentions, one's "accent", when one appropriates it. Not all words or artefacts submit equally easily to appropriation, some stubbornly resist, and some remain alien. According to Wertsch (1998), appropriation requires action by the user (using the artefact or word), at the same time as the resistance is both socio-cultural and physical. We cannot take a word to mean whatever we decide, or an artefact to do for us whatever we want. The environment and its materials talk back.

Beguin (2007) addresses the work that it takes by users to turn an artefact into an instrument, as what he calls instrumentation, an act in which the user makes the artefact her own. Similarly to Bakhtin, he points out how the artefact talks back in this process. We use the term interaction instrument with inspiration from this as well as from Beaudouin-Lafon (2000).

Wynn (1993) talks about how human beings make tools appropriate to a novel task. He describes appropriateness in terms of function, idiosyncrasy and tradition (Will the tool do the job and help fulfil the purpose of the task? Does it normally belong among my favourite tools for the kind of task at hand? How do we normally do this (in my community/culture)?) With reference to the above stages in appropriation, these terms point out that appropriation is both a matter of function and purposefulness, of individual experience and preference and of socio-cultural tradition.

To summarize, our micro level model of appropriation suggests that we focus on the process of taking something that belongs to others and making it one's own. This is done in four stages: anticipation, initial familiarity, development of repertoires of routines, and the development of new forms of use. In the next section we proceeds to analyzing our empirical data.

MICRO-LEVEL ANALYSIS

We have been particularly interested in the moments where the iPhone seems to move from being somebody else's, to being half one's own, from being half one's own to being fully one's own, this way moving from being instrumental to specific functions to become an interaction instrument to an infinity of functions, and how use develops from there in terms of new routines as well as new motives.

Anticipation of the new and the realities of use

I9 talks about why he bought his iPhone (Q9.1):

"I used to have a lovely old Nokia, a real handy-man device, that was water resistant and much more. It suited me really well, but it broke eventually. When I looked in the shop it was all plastic and cardboard, and none of that would last with me, so I decided to make the jump into the 21st century."

For I10 the situation was somewhat different. She had been given an iPod touch as a present, and *"I got hooked, knowing that my next new telephone was bound to be an iPhone. Getting phone, camera and everything into one is just excellent!*" (Q11.1) I11, similarly mentions that he has owned several iPods before he purchased his iPhone.

I12, who has been 'late' in buying an iPhone on the other hand, said that she did not want one because of the hype, but that ultimately: "*I gave in because I wanted something that worked*" (Q12.1). She also points to the importance of the brand and of the choice of her friends: "*It's a giant brand. 70 pct of my friends have them*" (Q12.2). I9 complains that setting up the iPhone was a real problem, in particular since his laptop crashed right at the same time as he purchased the telephone.

Looking across our data, to the new users there seems to be two ways of describing what constitutes the quality of one's iPhone: Aesthetically it is smooth, sleek, magnificent, great, easy to use and even addictive. Functionally it is: Everything you need in one, an idling device, or a 'phone+'.

Many interviewees made explicit the assumption that they were buying a good cell-phone, one that would do the job as telephone and messaging device. For three interviewees, this was their main reason for buying the phone. Several interviewees made explicit reference to Apple and Macs when they talked about that.

Karapanos et al. (2009) mention problems of calling/dialling, and in general with typing on the soft keyboard. In this current inquiry, text messaging was the most predominant cause of complaint. This should be seen in a context where the telephone function was critical to many (as expressed by I8) but where people didn't actually do much telephoning, as expressed in Q6.3. Instead, texting is important.

Q6.3: *"I text and surf more than I call."*

Q1.4: *"What is worst – text messaging!"*

As indicated in Q6.1, coolness and general usability beat poor phone: *"What I like most about the iPhone is that it is nice and easy to handle–elegant and aesthetic. It works, it is fast and there are no problems. When I got it, it sent a signal to my surroundings."*

Cool is about usefulness and reflection of self in their community, whether this was among trendsetters on the web (Q6.2) or at the lunch table at work (Q1.2).

Q6.2: *"I don't much follow discussion fora and blogs on iPhones, but I do read other blogs, and if one of those said it was no longer cool with an iPhone I would probably abandon it."*

Q1.2: *"It is a bit big, but it is fun to place the iPhone on the lunch table at work, then you're in."*

In summary, coolness was important in several ways. First of all, the iPhone offers itself to the expectance that it will serve the purposes at hand, initially primarily phoning and texting, but to e.g. new users who have past experiences with iPods, also other purposes. In terms of idiosyncratic preferences, new users don't just see the iPhone as something that will disappear into the background. Rather people are expecting it to be a smart phone that will bring them "into the 21st Century". This is also illustrated in how people see their future iPhone use in relation to their communities. There are two sorts of persistent communities relevant to this development: For some, their community at large, including a wide network of Facebook and blog friends, is part of the definition and sharing (e.g. I3 and I6), for others it is the narrow group of colleges or relatives that are part of formation of identity and keeping the development going (e.g. I2). Messaging as function and as instrument did not work well, yet users appreciated the critical functionality of a telephone and messaging combined with the omnipresent Internet browsing capacity.

The "new half"–Initial familiarity, and early use

Overall, the expectations that people had, carried through in what kinds of problems they encountered initially: The size of the iPhone was a matter mainly to those who expected a cool cell-phone. They had only to a limited extent started using Apps, and not released what to others seems like the full potential of the iPhone (Q5.1, Q1.3).

Q5.1: *"I don't have the time to explore. I miss having a manual that I can lean back and read."*

Q1.3: *"I got this Facebook message about a new App for a local music festival. I followed the link and then I went cold. My husband had to do the rest."*

People who were PC users (in contrast to Mac) described problems of setting up/connecting (I2, I8). In addition, several interviewees described the universe of the iPhone as so different that it demands an effort (e.g. Q7.2). The expectation at this stage of use was that this was a hindrance to overcome after which it is downhill.

Q7.2: *"It is an explicit choice to make the leap, and you don't want to go back."*

Interviewees (e.g. I10, I11) who had previously owned iPod Touches mention very few of such issues. I9 describes many surprising problems of making the iPhone work. In particular he was surprised that the phone couldn't really be set up without access to a computer (this has since been changed, and some of the issues had to do with the provider).

Five interviewees mentioned a specific purpose with their purchase: to get a better mobile organizer/calendar (shared or individual):

Q4.1: *"I got the phone trough work. We wanted a shared calendar for four of us, and perhaps later for the entire school. We put phone numbers of all students on the phones, and that has turned out to be really useful for me as study counsellor. The shared calendar was less successful, but in other ways the iPhone is highly addictive."*

As indicated by Q4.1, the expectations were not always met when using the iPhone, neither in the short term, nor in a longer perspective. While I4 was less successful with the expected purpose, Q7.3 illustrates that for others, they got what they expected when if came to organization and calendars.

Q7.3: *"The iPhone has changed my life because it is just so easy to check little things on the web. I check my school schedule and assignments several times during the day, and I access conferences and messages in the 'FC' App*[1]*. "*

In summary, the interviewees who were new to the iPhone interaction and set-up, experienced novel features and encountered problems that made them reconsider their initial ways of seeing the iPhone. Their frustration was largely due to a different universe where the very initial learning curve was quite steep, in particular to those who didn't trust (or hadn't previously experienced) the Apple universe to help them.

In addition, the expectation of something new, such as in the case of wanting shared calendars in a group, was not always matched by the actual use of the iPhone, and in this manner, the iPhone did not offer the necessary initial familiarity as a shared instrument for the group. In the particular example, this did not prevent the individual user (in this example) from talking about the iPhone as 'addictive'.

"Half mine"–Development of routines

The terms used to describe this stage included *"From cool to indispensable"* (I6) and *"All in one information-device"* (I3, I7). Q7.3, Q3.1 and Q2.1 are good examples of how people described their use.

Q3.1: *"I mainly surf when I have 2-5 minutes here and there–it fills the pauses for me. Facebook and surfing. I check the news when my son is playing. I like that I can get instant information about stuff, like yesterday I got some stains on my shirt. Instead of calling my Mom, I googled it instantly."*

Q2.1: *"I don't distinguish between work use and private. I call, text, do email, manages work appointments/schedule, do office work, and I use the iPhone as a toy. I'm writing a cookbook that I want to put on-line as an App."*

The interviewees at the same time pointed out how the iPhone found its place among other computers and devices (Q7.4, Q6.7).

Q7.4: *"I read e-mail on the computer if I can. The keyboard is better and multitasking. But it is good to know that those things can be done on the iPhone. I have decided to only access Facebook from the iPhone. That's because it used to distract me and take too much of my time. Now I have better control over that, also since the Facebook App gives a different kind of access to Facebook."*

Q6.7*: "I use my computer for study notes in general, but I often make notes about books on the iPhone when I read a book on the couch. I send the notes to myself. (...) I probably do most things on the computer. But I read e-mail at home on the iPhone, if the computer is not nearby. I make study notes on the computer and notes about books I read on the iPhone."*

I10 explains how she has set up her calendar to synchronise with various other calendars, including that of her spouse. She also talks about what she does on the iPhone, and when: "*I may look up things on the iPhone. Email messages I mainly do on the computer, unless I'm away for the day, and similar for Facebook, simply because it is more readable*" (Q10.2)

The iPhone served many uses as clearly expressed in Q4.2: *"I use the iPhone when I work out, download many Apps, I use the camera a bit, also for video. I buy metro maps when I go to places. I use the iPhone as remote to the music on my computer. I have downloaded a spreadsheet that I use to manage our car pool. I have used the iPhone as remote control for Keynote."*

Q11.2: *"The telephone part is most important. With text messaging it is probably 60 pct. Then 30 pct. browser and apps, and 10 pct. music player (...) I play most of my music from my computer or my iPod Touch."*

Such a division of "work" among instruments is not permanent as can be seen in Q3.2 and Q6.8.

Q3.2: *"Over the summer I didn't want to bother reading email. Today I'm at work without a computer, because I have meetings all day, and I have what I need at hand."*

Q6.8: *"I was without a computer for half a year, I used the iPhone instead."*

For I9 the development happens in his social circles, and I12 mentions how she shares experiences with both her boyfriend and her group of girlfriends, and describes how her circle of girlfriends shares experiences of use and Apps.

Our interviewees accordingly developed new routines, in particular for using the Internet while idling and being on the move (such as not checking bus schedules

[1] FC: FirstClass is a client/server groupware, email, online conferencing, and bulletin-board system, used in higher education and K-12. Mentioned by three interviewees who are students or teachers.

before going places). These are both a matter of purpose, and of individual experience and preference. They also developed new strategies for the division of work between their iPhone and their computer. Furthermore, they went through a phase where they explored Apps and made use of the iPhone for many different, quite explorative, purposes, which were occasionally shared in social settings while hanging out with friends and family. This phase of exploration seems cultural in two senses: First of all the explorative, social activity may happen simply because many friends are rather in sync when it comes to purchasing iPhones, and secondly it may be an effect of how the App store, etc. is set up; that it deserves explorative attention for a while after which the users have a different understanding of what kind of help they may find there.

"All mine" and beyond–Mature use, new uses

The iPhone is a social thing at several levels. People in general supplemented their calling and texting with e.g. Facebook, and as such their phones had more "channels". Secondly, for several of the interviewees, the iPhone was a ticket to social networks where they shared experience with family and friends. Last, but not least, people would let their children in particular, and friends to some extent, use the iPhone to watch movies and TV-shows, or play games.

Q7.5: *"One day I was downtown waiting for somebody. While I waited I decided to book my hairdresser on-line. I found a document about our tutor schedule in 'FC' and checked my schedule and homework in "Lesson". Before I knew, I was good to go!"*

With quote Q7.5, I7 described a decisive moment, which significantly changed his use of the iPhone. I3 and I4 gave similar examples of moments, where the iPhone moved from being just a new phone to fulfilling an entirely different set of purposes in the hands of its user. In the following, we look further into the stages that users went through in adapting the iPhone and making it their own. Part of this maturity was about finding the role of the iPhone in life routines such as when I6 read poetry in boring school lessons (Q6.4), I3 used an iPhone App for meditation, I1 browsed Facebook in the car on longer trips; I7 described how he no longer had to plan e.g. busses. I4 talked about uploading tourist guides/maps when going new places. I10 reads texts in Italian whenever she can.

Q6.4: *"I read Classic Poetry when I get bored. I use Oxford Dictionary of Philosophy extensively. I downloaded a huge collection of Dostoyevsky, but that is virtually unreadable and I don't use it."*

I10 describes her interest in studying Italian language and how her iPhone has found a role in that. She reads Italian news and keeps several Italian dictionaries and translators on her iPhone, to have them ready to hand.

Intensive pursuit of new Apps and functions belonged to the early stages of use. Some people used to be intensive blog/news readers, some used to experiment a lot, but for almost all, there came to be a small core of Apps that they used frequently, while they were less systematic/intense in their pursuit of new Apps (e.g. Q3.3 and Q6.5). The second round of interviews with 3, 4 and 6 indicates that this tendency does not change after an additional year of use. As a matter of fact none of these three interviewees have only used more than a handful of new Apps since we talked the first time.

Q3.3: *"I used to read slash-dot, and all those sites. At work that are also quite a few enthusiasts, and I used to be the kind of guy who drizzled the latest news to my friends, e.g. on Facebook. Now I only read things that are digested and that other people let drizzle to me."*

Q6.6: *"I wouldn't pay for games, but probably for Classic Poetry, or Oxford Dictionary of Philosophy. They are really useful."*

Q6.6. illustrates an entirely idiosyncratic element of usefulness. I6 many times emphasized that his iPhone was a poetry/philosophy device that his friends found very boring and that he used his iPhone in quite idiosyncratic ways when he was reading or bored. I10 was intensively focused on her Italian studies and made her dictionaries etc. available wherever she went through her iPhone. To the long-term users (I2, I3, I4, I6, I8) the iPhone ended up being instruments with quite different motives and functions: I4's mobile office (Q4.1), I6's poetry/philosophy device (Q6.6), I2's cookbook device, I10's Italian reading room. Their iPhones-in-use obtained a new identity, not only through an extended repertoire of actions and routines, but equally because the iPhone mediated entirely new activities with new motives, quite similar to how Bryant et al. (2005) analyzed what it takes to become a Wikipedian.

The mature users to different extends seemed to have established themselves in professional or personal networks where they shared experiences: I8 had a strategy where what matters was entirely her designer-network (Q8.1). I3 and I4 were dependent on their work-relations for sharing, while I2 relied on his family network.

Q8.1: *"I use my network. My spouse is a professional App guy, so he knows where the action is. Also through work, I know a number of people who work in companies that design Apps. Actually I mainly download Apps because I know the designers or because I need to show them to my students (works in media education)."*

Underlying these various ways in which the iPhone became a more particular mediator, it was still a telephone and had critical uses that interviewees emphasized. Five interviewees mentioned that they didn't have to plan when travelling and going places because they could always find the nearest bus or train or look on a map. Also several people mentioned Apps that helped them for a particular time period, e.g. because they had an interest in a particular local activity, such as the Aarhus Festival Week. I4 mentions how he uploads metro maps

and other tourist information/Apps for places that he travels to. This underlines that many moved from exploring the App store in general as a pastime, to a more purpose, location, social or recommendation-driven exploration for new Apps.

Still, even the mature iPhone users are challenged by the pervasiveness of the iPhone as indicated by this quote Q3.1.1: "*It is the curse as well. When you should be watching the sunset, you go on Facebook. It takes away your time and presence*."

To sum up what happened for these mature users, there were decisive moments, where they recognized that they had made the iPhone their own. The analysis illustrates how the process of becoming a mature user is a matter of the iPhone finding its role among other artefacts in everyday life. The iPhone became an instrument of quite idiosyncratic activity, for shorter or longer time periods, and the motivation changed and diversified. Such new uses were important, and under development in the mature use situation. The diversification into typical and critical uses was an equally important, as were more focused experience-exchange networks. Underlying the ongoing development of the iPhone-in-use, simplicity and usability remained stable qualities.

We see development in terms of purpose, tradition as well as idiosyncrasy: Travel planning, calendar use and note-taking are all about purpose, taking off through exploration of Apps, and the development of repertoires of routines, However, as we point out above, when it comes to new forms of use, there seems at the same time to be a focusing or narrowing of function in the iPhone appropriation. Tradition played a role, and developed, both when I4 and his group of colleges develop their joint calendar use, and when I2 and his relatives discuss iPhones at family gatherings. I3 and I8 who have young children both point to the new role of the iPhone in entertaining their children. Idiosyncrasy played a role both in how the users choose to divide their activity between the iPhone and other devices, how users develop new forms of idling with the iPhone, and when it comes to making the iPhone a poetry, an Italian reader, or a cookbook device.

MACRO-LEVEL ANALYSIS

Looking back on Göranzon's three orders of change due to the introduction of computer technology, we have not yet been able to identify at the micro-level the third-order changes, even though we would like to suggest that the poetry machine, the Italian reader, etc. can be seen as seeds of a development where users, at least for a while, carry with them something that serves particular other roles than a cell-phone or a generic web-browser. The many choices of the App store seem to support users in creating such specialized devices, as well as a language for talking about them. The second order phenomena seem to embrace individual and social exploration, and shifting the focus from an extended phone to something else, which includes web-browsing, email, Facebook, etc. These are Apps and processes that in more than one manner, extends the scope of communication from a phone to something else, at the same time as they help provide other instruments for users such as maps, advanced train and bus schedules and more. The first order effects for many people lasted shorter than one half year. Nonetheless many interviewees reported technical challenges for the first months, depending somewhat on their background experience. For some, the leap was bigger than for others.

Looking at Rogers' scale of decision-making regarding adoption (1962), we find that the relative advantage of the App-world and iPhone over the previous generation of mobile phones can be seen in that people realize that what they have at hand is not only a smart/cool phone, but very much a general and quite malleable device (in parts due to App store). The iPhone manages to take up many different roles in (different) people's life at different times and is hence assimilated into many different individual's life. The iPhone is open to be adopted at many levels of complexity, from the couple of interviewees who use it for little more that phoning and texting, to some of the rather complex uses of a combination of email, calendars, etc., involving several users. The iPhone and Apps are easily explored, and there is a long tradition from Apple of offering simple programs that allow exploration. In the interviews we have also seen that people explore Apps, both alone and together with friends. The innovative nature of the use of the iPhone and Apps is very visible to others, as we have seen in the interviews; the lunch table, the family gatherings, etc. where the iPhone is quite literally brought to the table and talked about.

With this perspective in mind, it seems that the combination of the malleability of the App-world/iPhone, combined with Apple's long term approach to explorative learning and usability, and social sharebility are important elements of the appropriation of the iPhone and App-world at the macro-level.

It is, however, only when we also apply Engeström's concept of expansive learning that we are able to explain what happens in the bigger picture of the 'app-tzunami'. Many of the interviewees talk about the social moments as crucial to their appropriation, but when we take a closer look, what happens in these moments is not only that they draw the technology into their life world, they do in fact expand their life world and do things, they did not expect themselves. They see their capabilities in a new and expanded light and are able to do more than they expected. This has become the real intriguing part of our study, which we are going to follow up with future research.

SUMMARY

A generic instrument must accommodate a variety of functions, idiosyncratic needs and routines, as well as

shared traditions within the user community at large and particular communities in particular. However, the instrument talks back and an instrument like the iPhone cannot necessarily accommodate all. The iPhone e.g. does not do a very good job for those who are interested in "only a smart telephone."

We have identified a threshold of initial familiarity vis-à-vis those who have no prior Mac experience. As a matter of fact it seems that the problem is really with a fundamental trust in the set-up, and interaction to actually work without manuals and installation hassle, etc. At the same time, though, the iPhone is easily explored, helped by various Apps. We have seen many examples of how social network and identity matter in this context. The iPhone is a ticket to talk within the family or circle of friends. The iPhone is discussed on Facebook and on the "right" blogs. Community also excludes some, which makes the iPhone important for identity build-up. It actually makes sense to see the iPhone as the beginning of a new type of community device: By recognizing the integration of telephone, messages and e.g. Facebook, our interviews paint a picture of a communication device that moves beyond one-to-one communication. The availability of many different Apps, and the many levels of sharebility further support this: The interviews sketch a phase where, alone and together with others, people explore numerous Apps, some with particular purposes, and others just as part of exploration or e.g. for party fun. They also explore the space between Apps and Web browsing, as they know it from their desktop, division of work with other devices, and they find new timeslots in their lives for this exploration.

In the next transition, identity matters and a limited set of overlapping instruments are in focus. Exploration is more targeted and not essential in mature use. Experience matters when the interviewees seem to have developed a general trust that a new App can be found if needed, such as when travelling to a new place, or being interested in some particular event for a period of time. The interviewees talk about poetry, Italian novels, planning and cookbooks, hence the title of this paper. The iPhone seems to quite successfully offer a platform for development of new uses, qua being a well-designed interaction instrument, not only from a market point of view, but also from the point of view of social and individual learning and development.

DISCUSSION

This explorative study presents an approach to appropriation of mobile devices and Apps that addresses development and community in addition to a more conventional individual focus. It is the beginning of an analysis that reaches over time, and outlines an understanding of technological mediators in this. Obviously the model needs further development. However, it seems particularly interesting that this kind of appropriation resonances with the theory of language and cognition presented by Vygotsky in the beginning of the previous century, and the concept of expansive learning formulated by Engestöm. This gives us hope that Göranzon's hypothesis regarding long-term change may help understand the App-world development as well. A highly relevant next step is that of studying what mechanisms interaction designers may employ in supporting directly and indirectly both appropriation and expansive learning through design.

CONCLUSION

Based on our explorative interpretative analysis of data from 12 interviews with iPhone users, triangulated with generally acknowledged models of appropriation of technology and Engeström's concept of expansive learning, we conclude that appropriation happens in the social context first, and only later at an individual level, and that once appropriation has happened on the individual level, not only specific Apps, but the whole idea of using a mobile device to accessing the world of Apps becomes 'second nature' to the user.

REFERENCES

Beguin, P. (2007). In search of a unit of analysis for designing instruments. Artifacts 1(1), 12-16.

Beaudouin-Lafon, M. (2000). Instrumental interaction: an interaction model for designing post-WIMP user interfaces. Proceedings of ACM CHI'2000, ACM Press, pp. 446-453.

Bryant, S.L., Forte, A. & Bruckman, A. (2005). Becoming Wikipedian: transformation of participation in a collaborative online encyclopedia. Proceedings of ACM SIGGROUP. ACM Press, pp. 1-10.

Carroll, J., Howard, S., Vetere, F., Peck, J., and Murphy, J. (2002). Just What Do the Youth of Today Want? Technology Appropriation by Young People. In Proceedings of HICSS'02, IEEE Computer Society, pp. 1777-1785.

Engeström, Y. (1987) Learning by Expanding. Orienta-Konsultit.

Göranzon, B. (ed.) (1983). Datautveklingens Filosofi. Carlsson & Jönsson Bokförlag.

Karapanos, E., Zimmerman, J., Forlizzi, J. & Martens, J.B. (2009). User experience over time: an initial framework. In Proceedings of CHI '09. ACM, New Press, pp. 729-738.

Rogers, E. (1962). Diffusion of innovations.

Turner, P., Turner, S. (2011). Grandfather's iPod. Proceedings of ECCE 2011, pp. 149-156.

Wertsch, J. (1998). Mind as Action, Oxford University Press.

Wynn, T. (1993). Layers of thinking in tool behavior. In Ingold, T. and K. Gibson eds. Tools, Language and Evolution. Cambridge University Press. pp. 389-406.